

Before the  
**Federal Communications Commission**  
Washington, D.C. 20554

In the Matter of	)	
	)	
Inquiry Concerning the Deployment of	)	
Advanced Telecommunications	)	GN Docket No. 04-54
Capability to All Americans in a Reasonable	)	FCC 04-55
And Timely Fashion, and Possible Steps	)	
To Accelerate Such Deployment	)	
Pursuant to Section 706 of the	)	
Telecommunications Act of 1996	)	

**RESPONSE TO NOTICE OF INQUIRY**

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**RESPONSE TO NOTICE OF INQUIRY**

**I. SUMMARY AND INTRODUCTION**

This communication is in response to the Federal Communications Commission's fourth inquiry concerning deployment of advanced telecommunications capability to all Americans in a reasonable and timely fashion, and possible steps to accelerate such deployment pursuant to Section 706 of the Telecommunications Act of 1996, GN Docket No. 04-54.

The Corporation for Education Network Initiatives in California (CENIC) is a not-for-profit organization serving the California Institute of Technology, California State University, Stanford University, University of California, University of Southern California, California Community Colleges and the statewide K-12 school system. CENIC's mission is to facilitate and coordinate the development, deployment and operation of a set of robust multi-tiered advanced network services for this research and education community.

**II. THE DEPLOYMENT OF ADVANCED TELECOMMUNICATIONS CAPABILITY TO ALL AMERICANS HAS NOT BEEN REASONABLE AND TIMELY**

In 2002, the State of California awarded a grant to CENIC to focus on speeding one-gigabit broadband to all Californians by 2010, or, in California shorthand, One Gigabit or Bust™. One gigabit-per-second technology represents more than a

thousand-fold increase in the speed of relaying information over today's commercial DSL and cable broadband networks.

CENIC engaged Gartner Research to evaluate the economic potential of an acceleration of next generation broadband deployment in California. In addition, Gartner was asked to interview many of the top broadband thinkers, policy makers and consumer advocates within California and throughout the U.S. with a view toward understanding the opportunities and challenges a next generation broadband in California might face. This response to GN Docket No. 04-54 is rooted in the findings and recommendations of the Gartner report, *One Gigabit or Bust Initiative—A Broadband Vision for California*. A copy of this report is available at

<http://www.cenic.org/GB/gartner/index.htm>

Deploying advanced broadband networks is critical for California and the nation. As detailed in the Gartner study, California is on the threshold of a multibillion-dollar opportunity. A \$376-billion upside in gross state product (GSP) by 2010 is possible with the implementation of a focused One Gigabit or Bust broadband initiative. Moreover, two million new jobs could be created.

This economic benefit potential is based upon an International Telecommunications Union study; Gartner's analysis establishes a positive correlation between broadband utilization and positive economic opportunity. For the full details about the economic benefits, please refer to Section D of the aforementioned report, "Potential Economic Opportunity of Ubiquitous Broadband Utilization," on page 18.

In 2003, CENC launched the One Gigabit or Bust Initiative to address the critical technical, organizational, policy, and financial challenges facing the delivery of one gigabit broadband to all Californians by 2010. The Initiative brings together the interests of research, education, commerce, state and local government and the general public

to address the issues surrounding the implementation of robust end-to-end broadband capabilities to every education institution, business and home in California.

Gartner recommended that CENIC, through its One Gigabit or Bust Roundtable, begin the process of defining the goal for next generation broadband deployment and establishing an action plan. The actual work of the Roundtable is done in Task Forces, which are organized by topic into four overarching areas – technical, policy, economic, and implementation. The Roundtable meets three times a year, with much of the work accomplished via topical mailing lists. This is a bottoms-up approach for catalyzing change modeled after the Internet Engineering Task Force (IETF).

Since California is a microcosm of the challenges and obstacles facing the nation for next-generation broadband deployment, the action plan developed by the Roundtable can potentially be replicated to develop a national approach to broadband deployment.

**a. The FCC's Definition of an "Advanced Telecommunications Capability" is Too Conservative and Does Not Address the Functional Requirements of Next Generation Broadband**

Perhaps Nitin Shah, the former chief strategy officer for ArrayComm, has best captured the essence of next generation broadband – "It's not about capacity. It's about the capabilities made available by the capacity."

Based on Gartner's interviews, we assert there is a fundamental need for the FCC to expand the definition of broadband to reflect a useful speed target, symmetry in the upstream and downstream bandwidth, and Service-Level Agreements.

It is also imperative that the FCC adopt a technology-neutral stance on advanced telecommunications capabilities. However, along with a technology-neutral stance comes the obligation to foresee how regulatory and legislative actions can create demand or become a barrier to deployment. A wide variety of 'pipes' must be

utilized for ubiquitous broadband deployment from fiber to copper, wireless to laser. Protocols to drive the networks will grow and change. Applications such as Video over IP or Voice over IP already exist and new alternatives are around the corner. A knowing vision of the future is an essential element in today's regulatory environment.

A goal of one Gigabit modeled on historical growth patterns is modest. Only 20 years ago, the average business desktop-computing device required a mere 9.6 Kbps of bandwidth (the average home computing device was virtually non-existent). Today the average business desktop is networked using 100 Mbps – an exponential increase of over  $10^5$  power. A similar increase applied to the FCC's 200 Kbps broadband standard results in an anticipated speed of 20 Gigabits within 20 years. The historical evolution of bandwidth requirements supports the Gigabit goal.

One Gigabit is about transforming our personal, professional, and civic lives. Moreover, it gives every person and every home the capacity to be an information producer and information consumer.

A new survey and report from the Pew Internet & American Life Project validates this assertion. Pew found that 44% of U.S. Internet users have contributed material to the online commons. More than 53 million American adults have used the Internet to publish their thoughts, respond to others, post pictures, share files and otherwise contribute to the explosion of content available online.

In today's world of interactivity, Gartner advocates that true broadband does not begin until the network can delivery sustained 10-Mbps symmetrical data rates to the home, and requires at least 50 Mbps to deliver on its full promise of today's known applications. But that defines today's world.

Gartner asserts, and CENIC concurs, one Gigabit per second of throughput per home will be required to support next generation broadband applications that include: the use of network appliances that use the network for storage and application hosting;

multiple-party voice/video and data chat sessions, massive multi-party online learning, telework and gaming, and hundreds of device connections within the home. At a minimum, one Gigabit will be required for holographic image projection for use in virtual meetings, telemedicine and distance learning.

**b. Advanced Telecommunications Capabilities Are Not Being Deployed to All Americans**

Gartner found that in 2002 the penetration of today's broadband services (DSL and cable) in California was 22.78 percent of households, up from 14 percent in 2001. It is important to note the only other country with penetration similar to California is South Korea. Not choosing to rest on its laurels, South Korea is embarking on an ambitious national program to replace high speed services through the deployment of next generation broadband using fiber to the home. It is important to note that today one gigabit requires fiber, though wireless technologies will offer important contributions to ubiquitous deployment of next generation broadband.

However, while California sets the bar on broadband deployment compared to other nations, there are many areas in our state, both rural and urban, where there is pent up demand because broadband has not been widely available to residents. Some are unable to even get dial-up access.

The private sector cannot, based solely on traditional investment models, provide such capabilities in many parts of our state. At the same time, there is no state or federal incentive for true facilities-based competition.

Clearly, broadband has already become essential for much of our population. Models such as the FCC's Universal Service access model are obsolete and constrained to traditional POTS. New flexible models need to be created that anticipate the wide variety of future communications mediums and allow for technology-neutral regulatory policies.

In our report, *Latino Education Issues Task Force Workshop: Fostering a Collaborative Vision of One-Gigabit Ubiquitous Network for California's Latino Community*, we identify barriers to broadband deployment including 1) negative perceptions of technology, and 2) misperceptions of cost, complexity of use, and relevance to daily life. We must not forget human infrastructure in the deployment of broadband and the need for simplified technology and customized applications. The regulatory environment must recognize this as the primary driver – and should use technology-neutral, human needs to drive deployment incentives and essential regulatory actions. A copy of Latino Education Task Force report is available at <http://www.cenic.org/GB/pubs/latwp/contents.htm>

**c. Deployment of Advanced Telecommunications Capability Has Not Been Reasonable and Timely**

While there is widespread support for broadband deployment, we assert that broadband deployment has not been reasonable and timely due to a dichotomy of interests (p25) and due to the fact that national telecommunications policy is at a stalemate (p42). As a result, the One Gigabit or Bust Initiative was launched to focus on speeding deployment to every home, school, and business by 2010. Through this initiative we are spearheading a concerted and integrated effort focused on common objectives. Our bottoms-up approach is intended to capitalize on the many local and regional programs in a way that helps achieve the overall state goal and also allows for the participants to share successes and failures. CENIC intends to promote a three-year strategy for planning, designing, and implementing community, county, and regional projects.

**d. Actions to Accelerate Deployment**

Through the One Gigabit or Bust Roundtable, Californians are beginning the process of establishing an action plan that addresses the barriers and solutions to



deploying One Gigabit. We urge you to review Section I of the Gartner report, "Next Steps," on page 46.

### **III. CONCLUSION**

The comments herewith are in response to the Notice of Inquiry, GN Docket No. 04-54. We urge the Commission to review the Gartner report which outlines the important items to be considered in strategy formalization for ubiquitous deployment of advanced telecommunications capabilities. The Gigabit or Bust Roundtable Task Forces are identifying the barriers and potential solutions for various technologies that will speed next-generation broadband deployment. California has a range of geographical and economic issues within this state; and we anticipate that our solutions will help other regions in the nation develop their own strategies for broadband deployment.